Ibbotson® SBBI®
2013 Valuation Yearbook

Market Results for
Stocks, Bonds, Bills, and Inflation
1926–2012

M RNINGSTAR®

The relationship between systematic risk and expected return can also be expressed mathematically. The CAPM describes the cost of equity for any company's stock as equal to the riskless rate plus an amount proportionate to the systematic risk an investor assumes.

$$k_s = r_f + (\beta_s \times ERP)$$

where:

k_s = the cost of equity for company **s**;
r_f = the expected return of the riskless asset;
β_s = the beta of the stock of company **s**; and
ERP = the expected equity risk premium, or the amount by which investors expect the future return on equities to exceed that on the riskless asset.

Since the CAPM has only three variables—the expected return on the riskless asset, the beta of the stock, and the expected equity risk premium—it is one of the easiest models to implement in practice. However, an estimate of each of the above three variables must be formed. Like all components of the cost of capital, these variables should be measured on a forward-looking basis. Chapters 5 and 6 are devoted to estimating the equity risk premium and beta, respectively. Factors to consider in estimating the riskless rate are covered below.

Risk-Free Rate

In general, most valuators can agree that the risk-free rate is a forward looking rate that factors in long-term expectations on growth and inflation. The CAPM implicitly assumes the presence of a single riskless asset—that is, an asset perceived by all investors as having no risk. The ability of the U.S. government to create money to fulfill its debt obligations under virtually any scenario makes U.S. Treasury securities practically default-free. While interest rate changes cause government obligations to fluctuate in price, investors face essentially no default risk as to either coupon payment or return of principal. Asset values can vary significantly depending upon the type of risk-free interest rate selected and cash distribution characteristics of the subject asset being valued, the time horizon, and how a valuation practitioner applies this rate into his or her model.

Type of Interest Rate

A common choice for the nominal riskless rate is the yield on a U.S. Treasury security. Should the yield on a Treasury bond or a Treasury STRIPS be used to represent the riskless rate? In most cases, the yield on a Treasury coupon bond is most appropriate. If the asset being measured spins off cash periodically, the Treasury bond most closely replicates this characteristic. On the other hand, if the asset being measured provides a single payoff at the end of a specified term, the yield on a Treasury STRIPS would be more appropriate.

Time Horizon

The traditional thinking regarding the time horizon of the chosen Treasury security is that it should match the time horizon of whatever is being valued. When valuing a business that is being treated as a going concern, the appropriate Treasury yield should be that of a long-term Treasury bond. Note that the horizon is a function of the investment, not the investor. If an investor plans to hold stock in a company for only five years, the yield on a five-year Treasury note would not be appropriate, since the company will continue to exist beyond those five years.

A different vantage point of the time horizon is that the risk-free rate should best match the distribution of the periodic cash flows of the asset being valued, in which case applying a yield curve may be more appropriate.

Table 4-1: Current Yields or Expected Riskless Rates

Yield (Riskless Rate)	(%)*
Long-Term (20-year) U.S. Treasury Coupon Bond Yield	2.41
Long-Term (10-year) U.S. Treasury Coupon Bond Yield	1.78
Intermediate-Term (5-year) U.S. Treasury Coupon Note Yield	0.46
Short-term (30-day) U.S. Treasury Bill Yield	0.02

Data as of December 31, 2012.
*Maturities are approximate.

It is also important to note that in February 1977, the Treasury began to issue 30-year Treasury securities. Prior to this date, the longest-term Treasury security was 20 years, which was the standard Ibbotson used for its data series. To remain consistent with Ibbotson's historical data series, the *Ibbotson® Stocks, Bonds, Bills, and Inflation® Classic Yearbook* continued to base the yield